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Weed Research...



by **G. A. PEARCE B. Sc. (Agric)**
BOTANIST, WEEDS & SEEDS BRANCH.

3.—Weed Control in Onions

COMPETITION from weeds has always been one of the greatest obstacles in producing a large and profitable onion crop. Even though inter-row cultivation is possible, hand weeding within the row is always necessary and this operation may cost as much as £30 per acre for the season. The use of a chemical for weed control in onions would not only reduce the labour involved but would mean that individual growers could handle larger areas.

Trials in this State have been undertaken since 1952. Reports from the United States in 1955 stimulated this work and satisfactory results have been obtained with chemicals during the past two years. Good results have also been obtained in Victoria and Tasmania in recent years using the same chemical.

EFFECTIVE CHEMICALS

Chloro I.P.C. (isoprophyl-n-(3 chlorophenyl) carbamate) and C.M.U. (3-p-chlorophenyl-1, 1-dimethylurea) have given effective weed control for a period of 8 to 14 weeks. However C.M.U. caused a reduction in yield and as it is difficult to apply evenly, its general use is not recommended.

Chloro I.P.C. is most effective when acting against weeds in the very young seedling or germinating stage. Best results are obtained if the chemical is applied to a clean soil surface immediately after planting the seed, seedlings or dry set bulbs. Chloro I.P.C. penetrates the surface of the soil so that seed planted to a depth of one inch or more is unlikely to be affected. The downward movement of the chemical is more likely in light sandy soils than in heavy soils.

RATE OF APPLICATION

At the rate of 4 lb. Chloro I.P.C. per acre, 7 fluid ounces of 30 per cent. (or 4 fluid ounces 50 per cent.) Chloro I.P.C. in 3 gallons water is sufficient to treat 160 square yards.

1. **Seed.**—Where the crop is planted by seed, Chloro I.P.C. should be only used on heavier type soils at the rate of 4 lb. per acre. With sandy soils there is a strong risk of a reduced germination of onion seed due to the movement of the chemical to the level of planting. Because of this risk an application of power kerosene at the rate of 40-50 gallons per acre is preferred. With both Chloro I.P.C. and kerosene the spraying should be undertaken two to three days before the onion seedlings emerge.

2. **Seedlings.**—Planted out seedlings should be sprayed within three to four days of planting. At this time the plants are not making active growth so that the risk of damage is minimised. Chloro I.P.C. can be applied to the crop at 4 lb. per acre either on light or heavy soils.

3. **Dry Set Bulbs.**—These emerge much slower than seed so that the application of the chemical can be safely delayed. Best results will be obtained if the crop is

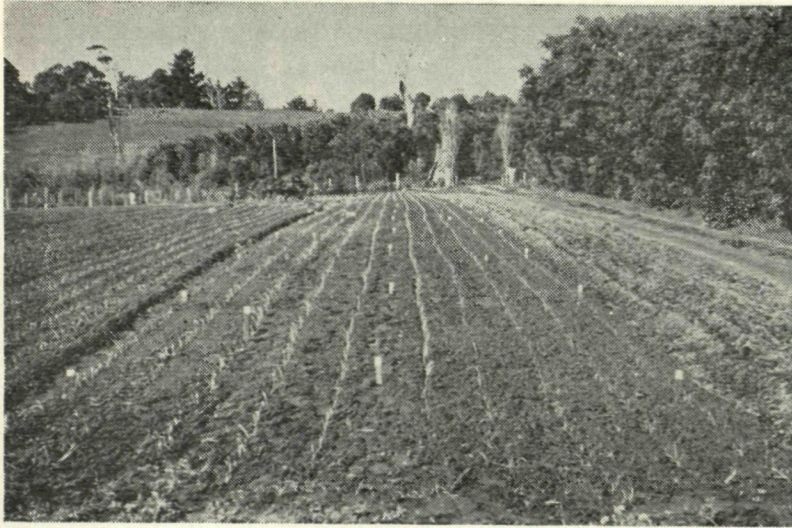


Fig. 1.—General layout of onion trial at Bornholm. The chemicals were applied one day after the seedlings were transplanted

sprayed at the first sign of any weed emergence. The recommended rate of application is 4 lb. per acre.

FURTHER SPRAYING

The initial treatment with Chloro I.P.C. should give effective control for a period of 8 to 14 weeks. A further spraying can be applied without damaging the onions and this should be undertaken at the first appearance of a general weed emergence. A rate of 4 lb. Chloro I.P.C. per acre should be used.

WEEDS CONTROLLED

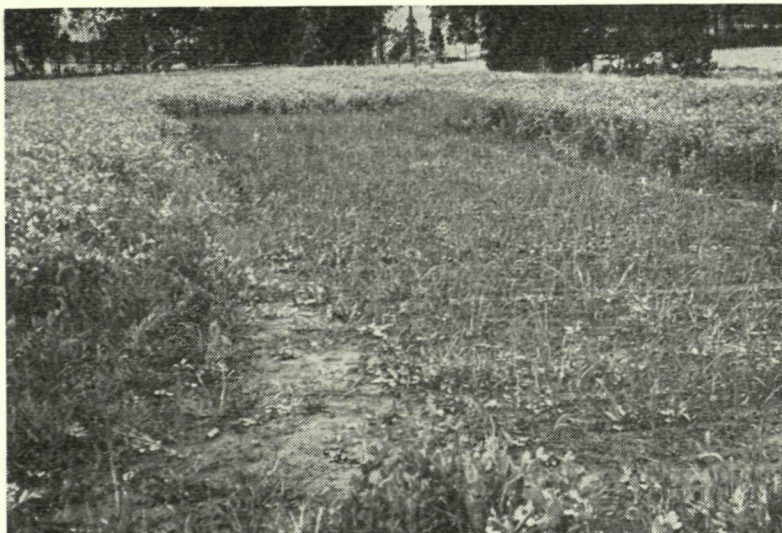
Under local conditions good control of the following weeds has been obtained—Stagger Weed (*Stachys arvensis*), seedling Docks (*Rumex* spp.), Fumitory (*Fumaria capreolata*), Wimmera ryegrass (*Lolium rigidum*), Winter grass (*Poa annua*), Pigweed (*Portulaca oleracea*) and Burr medic (*Medicago denticulata*).

Most perennial weeds are resistant to this treatment and other annual weeds may also be more difficult to control.



Fig. 2.—*Fumaria* controlled with 4 lb. Chloro I.P.C. per acre

Fig. 3.—General view of onion trial at Dardanup. The chemicals were applied one day after the seedlings were transplanted



METHOD OF APPLICATION

To obtain best results it is essential to make an even application of the chemical to the soil. In W.A., individual onion plantings are not usually large. For this reason most spraying can be undertaken with knapsack spray. A convenient volume of spray would therefore be 100 gallons per acre. At the 4 lb. rate of application, 7 fluid ounces of 30 per cent. Chloro I.P.C. (or 4 fluid ounces of 50 per cent.) dissolved in one knapsack of water is sufficient to treat 160 square yards.

The bed should be disturbed as little as possible after the treatment is applied

as a fresh germination can be expected once the soil surface is broken. For this reason the whole area should be sprayed rather than small strips along the rows.

COSTS OF TREATMENTS

Chloro I.P.C. is a liquid and can be obtained as proprietary lines from a number of commercial firms. The cost will vary according to the concentration contained; however, it is in the vicinity of 40s. per lb. of Chloro I.P.C. This means that it will cost approximately 5s. to treat 160 square yards of crop. No more than two or three sprayings are likely to be required in one

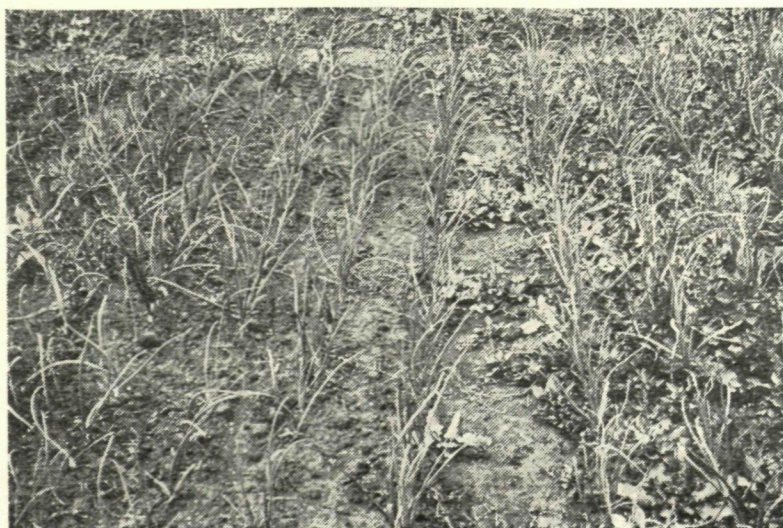


Fig. 4.—The plot on the left received C.M.U. at the rate of 2 lb. per acre. However, the onion yield was markedly reduced with this treatment

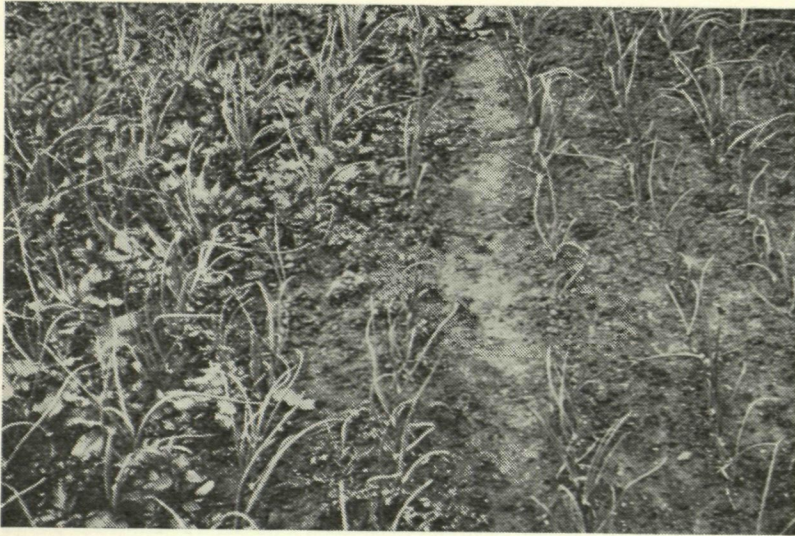


Fig. 5.—The plot on the right received Chloro I.P.C. at the rate of 4 lb. per acre. The yield of onions was not reduced

season so that this cost compares more than favourably with inter-row cultivation and hand weeding.

SUMMARY

1. Trials undertaken under local conditions have given good control of weeds in onion crops. Similar results have been obtained in other States in the last few years.

2. On sandy soils, Chloro I.P.C. should not be applied to areas planted by seed until the plants have at least reached the "hook" stage.

3. On heavier soils, Chloro I.P.C. can be applied to areas planted with seed, the first treatment being applied a few days before the onion seedlings emerge.

4. Planted out seedlings or dry set bulbs can be treated with Chloro I.P.C. immedi-

ately after planting whether growing on heavy or light soils.

5. Well established onion plants can be safely sprayed with Chloro I.P.C. A second treatment should be applied at the first sign of a general emergence of weeds.

6. Rate of Application.—The standard rate used should be 4 lb. Chloro I.P.C. per acre. A crop planted by seed on light sandy soil should not be sprayed unless the onions are in the "hook" stage.

7. Most winter-growing annuals including Stagger weed, seedling Docks, Fumitory, Ryegrass, Pigweed and Winter grass have been controlled.

8. Using 4 lb. Chloro I.P.C. per acre the cost of treating 160 square yards is approximately 5s.

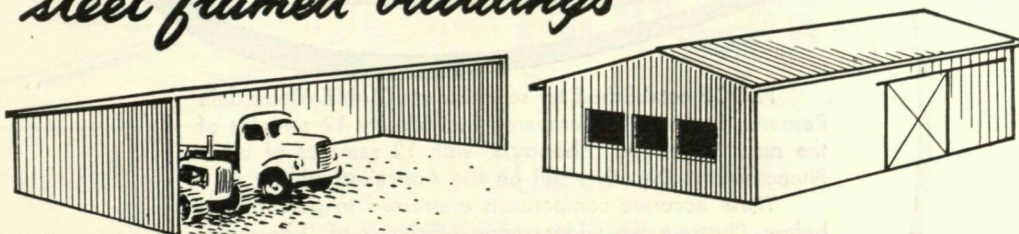
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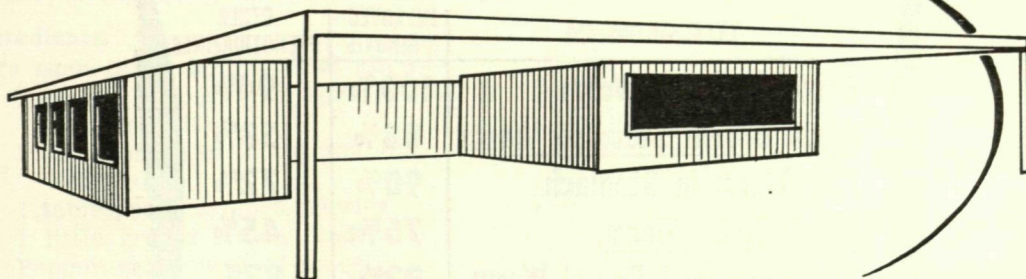
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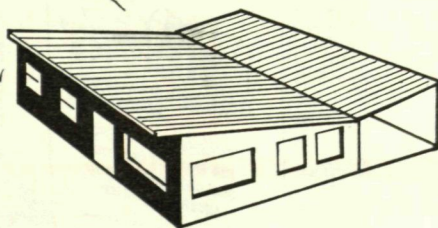
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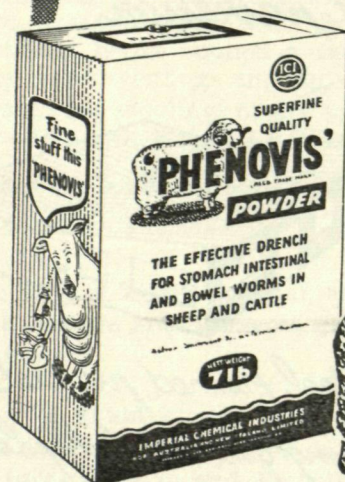
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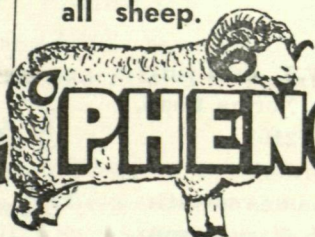
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